

## Drywood and Dampwood Termites<sup>1</sup>

F. M. Oi, R. Scheffrahn, W. Kern, and K. C. Ruppert<sup>2</sup>

In Florida, structurally damaging termites generally belong to one of three groups: drywood termites, dampwood termites, and subterranean termites. This document focuses on the first two groups. Drywood and dampwood termites belong to the family Kalotermitidae. These termites live inside the wood they eat. Subterranean termites (families Rhinotermitidae and Termitidae) usually live in the soil and travel to wood to eat. More information on subterranean termites can be found in ENY-210, Subterranean Termites (<http://edis.ifas.ufl.edu/IG097>).

It is important to know what termite you are dealing with because control measures can be significantly different in cost, application method and product selection. Drywood termites most commonly infest dry, sound (non-decayed) wood and are a problem more commonly associated with older homes. They can infest wood flooring, framing members, window sills, doors, fascia boards, and furniture. They are also known to infest attics where the temperature of the wooden members can exceed 110°F.

All termites are true social insects, which means they live in cooperative societies called colonies. Drywood and true dampwood termite colonies contain reproductives, soldiers (which defend the colony) and nymphs and immature forms called pseudergates or "false workers" (which perform most of the work in the colony).

### Signs of Infestation

#### Drywood Termites

A telltale sign of drywood infestation is the accumulation of six-sided fecal pellets. Fecal pellets are also known as "frass." Termites inside the infested wood push frass out through pencil-tip sized "kick-out holes" (1-2 mm diam.) in infested material. Frass can resemble "sawdust" or "coffee grounds." The pellets have a gritty texture when rolled between your fingers and can be from light brown to almost black in color. The color is not related to the age or the color of the wood. Pellets usually collect into piles on the floor and other surfaces. A sign of advanced infestation is surface blistering or warping. Drywood termites sometimes tunnel just under the surface of the wood giving it a

1. This document is ENY-211 (IG098), one of a series of the Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. First published: April 1993. Revised: February 2008. Please visit the EDIS Website at <http://edis.ifas.ufl.edu>.

2. F. M. Oi, assistant extension entomologist, Entomology and Nematology Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611; R. Scheffrahn, professor and W. Kern, associate professor, Entomology and Nematology Department, University of Florida, Ft. Lauderdale REC, Davie, FL 33314; and K. C. Ruppert, associate extension scientist, Florida Energy Extension Service, Cooperative Extension Service, IUniversity of Florida, Gainesville, 32611.

blistered, uneven appearance. Infestations may be detected by tapping the wood every few inches with the handle of a screwdriver or by probing with a sharp tool. Damaged wood sounds hollow - a papery, rustling sound indicates tunnels just beneath the surface.



**Figure 1.** Drywood termite (*Cryptotermes brevis* soldier with brown head and cream colored body; head “phragmotic” and can plug kick-out holes. Credits: University of Florida

### Dampwood Termites

Dampwood termites are found only in wood with high moisture content. In structures they need sources of “free water,” such as roof leaks, to survive. Dampwoods are considered a minor structural pest, but they can do substantial damage if left unchecked. Correcting moisture problems and wood replacement are effective controls. They are commonly found infesting large trees. Dampwood fecal pellets are often stuck together along the bottom or sides of the tunnels or may dissolve into a muddy paste. Infested wood usually shows no external damage because openings in the wood are plugged with fecal material. If the wood is sound, dampwood termites eat along the grain. However, if the wood is decayed they consume irregular galleries similar to those of the drywood termite.

Another sign of infestation for both drywood and dampwood termites is the presence of wings or winged termites (also known as “swarmers” or alates) inside or around the structure. The termites shed their wings after short flights. These wings are commonly found around window sills, and on floors and countertops. There is a possibility that termites may be flying into the structure from the outside, but

generally there will be significantly fewer wings and termites if they are coming from indoors. Swarming is a seasonal event, happening once, perhaps twice a year. Thus, the opportunity to find infestations based on the presence of wings or swarmers is limited.

Table 1 contains a comparison of the characteristics of the three major termite pest groups in Florida.

## Description of Drywood and Dampwood Termites in Florida

### Drywood termites

- The West Indian drywood termite (*Cryptotermes brevis*) soldier is easy to identify by its distinctive head, which resembles a burnt match (Figure 1). This type of head is termed “phragmotic.” The head is used to block the tunnels in the termite gallery system thus protecting the colony from intruders, especially ants. This termite typically infests picture frames, furniture, boxes and structural woodwork. Interestingly, this species is never found in natural environments but only in wood in human-made structures. (See also: <http://edis.ifas.ufl.edu/IN236>). The alates of related species, *Cryptotermes cavifrons*, will come to lights, but it infests only dead tree branches.
- Southeastern drywood termite (*Incisitermes snyderi*) colonies are generally larger than those of the West Indian drywood termite and occupy larger pieces of wood. These termites are found in both natural and human-made environments and are the most common drywood in the state. The development of the colony is slow, but structural damage can be extensive if multiple colonies are present in the same structure. This termite usually swarms from May through November.
- The Western drywood termite (*Incisitermes minor*), is a non-native termite. It has been found in many parts of the state. This is the number one drywood termite pest in the western U.S. It usually swarms from the end of August through November. (See also: <http://edis.ifas.ufl.edu/IN526>).

**Table 1.** Comparison of the three termite pest groups.

Termite	Usual Location	Damage	Frass	Control Methods
Drywood	Dry, sound wood	Along and across wood grain	Six-sided pellets, dry	<ul style="list-style-type: none"> <li>• Wood replacement</li> <li>• Spot treatment</li> <li>• Fumigation</li> </ul>
Dampwood	Saturated or decayed wood	Along or across wood grain	Elongated pellets, moist	<ul style="list-style-type: none"> <li>• Elimination of moisture</li> <li>• Removal of infested wood</li> <li>• Spot treatment</li> </ul>
Subterranean (For control purposes, the arboreal species are included here)	Soil	Along wood grain	Sticky, incorporated into mud tubes and galleries	<ul style="list-style-type: none"> <li>• Structural modification</li> <li>• Liquid or granular chemicals</li> <li>• Baits</li> <li>• Physical barrier</li> </ul>

- *J. schwarzi* has been limited to south Florida. It usually swarms between April and June.
- *J. milleri* is found in the Keys. It usually swarms around April-May.

**Dampwood termite swarmers** are generally larger (average length 1/2 inch or 14 mm) than subterranean and drywood termite swarmers (average length about 1/3 inch or 10 mm or less). (See also: <http://edis.ifas.ufl.edu/IN279>).

- *Neotermes castaneus* is the largest termite (winged individuals are over 1/2 inch or 15.5 mm long) in the southeastern U.S. but it is not an economically important pest. Sometimes it is found in living trees. *N. castaneus* swarms during August through early December.
- *Neotermes jouteli* infests drier wood compared to other dampwood species. It is known only as an incidental pest in structures with excessive moisture problems. *N. jouteli* swarms from March to early June, then again in August to early November.
- *Neotermes luykxi* is also an incidental pest in structures. *N. luykxi* swarms from the end of June to early October.

## Preventive Measures

Used lumber, furniture and other wooden articles should be carefully inspected for termite infestations. Drywood termite reproductives may enter a building through the attic or foundation vents, under or directly through shingles or under eaves, or even open doors and windows. All vents, doors, and windows, especially those in the attic, should be screened with 20 mesh screen. A good coat of paint on exposed wood will provide some protection against termite entry. Before painting, all cracks and crevices should be filled with putty or plastic wood. Pressure treated wood is resistant to termite attack. Certain woods are also naturally resistant to termites; among these are heart wood of redwood, bald-cypress, mahogany, and Spanish cedar; however, these woods can be more expensive and will become susceptible after several years when subjected to aging and weathering.

## Submitting a Sample for Identification

Drywood and subterranean termites require completely different control methods. Therefore, correct identification of the termites is extremely important. If in doubt, take several swarmers to your County Extension Office for identification. Soldiers can also be submitted but most people do not find these unless they break open infested wood. Soldiers and winged specimens, which tend to dry and shrivel up fairly quickly, should be preserved in rubbing

alcohol. Termite identifications can also be made with just the wings. Samples consisting of only termite nymphs (workers) are difficult to identify and require a specialist. Pellets can also be submitted for identification.

## Control

Most drywood termite infestations are not cause for panic and immediate treatment. The best course of action is to take some time to research the pest control companies in your area and find the best treatment option for your home or construction type. Soil treatments, either with liquid insecticides or termite baits, would be ineffective because drywood and dampwood termite colonies are inside the wood, not in the ground.

If detected in the early stages and damage is localized, a drywood termite colony may be controlled by removing and replacing the damaged wood. It is very important to carefully inspect all woodwork in the building for pellets and/or damaged wood, especially in attics, baseboards, windowsills, floor joists, and furniture. Localized treatments for drywood termites include directly treating the infested wood. Products registered for wood treatment are usually liquids. The product is applied by brushing or spraying it onto the wood surface. Wood can also be treated by injecting insecticide directly into a termite gallery through holes made with a drill or into the kick-out holes. Applications can also be made to cracks and crevices such as the spaces between wooden pieces or between different building materials, such as wood and concrete, if there is evidence of an infestation. Use a product labeled for indoor surface treatments, if treating indoors, and outdoor treatment if treating termites found outdoors.

Homeowners can usually find registered products for local wood treatments (Table 2). More often, the skills of a pest management professional (PMP) are required. PMPs have the equipment needed to get the product to its target site (Table 3). If the infestation is too extensive and advanced for local treatment, it will be necessary to tent and fumigate the entire building. Although this method can be very expensive and disruptive, it is the only

treatment that will kill all termites in the structure, when done correctly.

Sulfuryl fluoride gas is used to create a toxic atmosphere within a confined space; under a tarp, within a sealed structure or inside a fumigation vault. Once the structure is cleared after the fumigation is complete, no sulfuryl fluoride remains in the structure. Thus, there is no product left to prevent termites from re-entering the structure. Because sulfuryl fluoride is odorless and colorless, chloropicrin ("tear gas") is used as a warning agent. This is the odor that can be detected sometimes after the fumigation is completed and cleared for re-entry.

Fumigation is usually the only alternative when the infestation is widespread or colonies are in areas that are difficult to treat locally. Fumigation can only be performed by a PMP licensed in the fumigation category. Contact several companies for an inspection and cost estimate for treatment. Ask for references of previous fumigation jobs.

For non-chemical control, construction should be designed to eliminate moisture and water leaks. Remove and replace infested or damaged wood. Microwaves, electroguns, and liquid nitrogen have limitations and require thorough wood access. Heat treatment can be used for whole structure of compartment treatments. The following link provides additional information on drywood control options: <http://flrec.ifas.ufl.edu/pdfs/DrywoodTermiteControl.pdf>.

### **Additional information posted by the Florida Department of Agriculture and Consumer Services:**

- Consumer Information on Drywood Termites: <http://www.flaes.org/pdf/Drywood%20consumer%20info2.pdf>.
- Consumer Service Aid for the Homeowner and Buyer Relating to Termites and Other Wood-Infesting Pests: <http://www.flaes.org/pdf/pub1e.pdf>.
- Consumer Information Bulletin: Alternative Methods of Treatment for Drywood Termites: <http://www.flaes.org/pdf/pub3e.pdf>.

- Important Information for Home Buyers –  
Understanding Wood Destroying Organisms  
Inspection Reports:  
<http://www.flaes.org/pdf/WDOInstructions.pdf>.

**Table 2.** Examples of Insecticides Labeled for Homeowner Use. These insecticides are generally intended as a supplement to a professional treatment. As with all pesticides, read and follow the label. The label is the law.\*

<b>Trade Name (Manufacturer)</b>	<b>Common Name</b>	<b>Formulation</b>	<b>Signal Word</b>	<b>Pests</b>
Bayer Power Force Carpenter Ant & Termite Killer Plus	Beta-Cyfluthrin	Emulsifiable Concentrate	Caution	Wood destroying pests
Ortho Ortho-Klor Termite & Carpenter Ant Killer	Bifenthrin	Emulsifiable Concentrate	Caution	Wood destroying pests
Bayer Advanced Home, Home Pest Control Indoor & Outdoor Insect Killer	Cyfluthrin	Ready-To-Use	Caution	drywood
Spectracide® Carpenter Ant & Termite Killer Insect Spray Concentrate	Permethrin	Concentrate	Caution	Termites
* Not intended as a comprehensive list, or product endorsement.				

**Table 3.** Examples of Insecticides Labeled for Professional Use. As with all pesticides, read and follow the label. The label is the law.\*

Trade Name (Manufacturer)	Common Name	Formulation	Signal Word	Pests
Bora-Care Tim-Bor (Nisus)	Disodium Octaborate Tetrahydrate	Solution	Caution	drywood
DeltaDust (Bayer)	Deltamethrin	Dust	Caution	dampwood, drywood
Demon TC (Syngenta)	Cypermethrin	Concentrate	Caution	drywood
Phantom (BASF)	Chlorfenapyr	Suspended Concentrate	Caution	Southeastern drywood
Premise 0.5 SC Premise 2 Premise 75 (Bayer)	Imidacloprid	Emulsifiable Concentrate	Caution	dampwood, drywood
Premise Foam (Bayer)	Imidacloprid	Foam	Caution	drywood
Optigard ZT (Syngenta)	Thiamethoxam	Suspended Concentrate	Caution	drywood
Termidor SC (BASF)	Fipronil	Suspended Concentrate	Caution	drywood
Termidor 80WG (BASF)	Fipronil	Wettable Granule	Warning	drywood
<b>Fumigation</b>				
Dow; Ensystem	Chlorpicrin	Warning Agent	Danger	drywood
Vikane (Dow AgroSciences)	Sulfuryl fluoride	Fumigant	Danger	drywood
Zythor (Ensystem II)	Sulfuryl fluoride	Fumigant	Danger	drywood
* Not intended as a comprehensive list, or product endorsement.				